

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT RECEIVED (PCT Article 36 and Rule 70)

26 AUG 2004

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Applicant's or agent's file reference P 02 157 WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/DK 03/00833	International filing date (day/month/year) 04.12.2003	Priority date (day/month/year) 09.12.2002
International Patent Classification (IPC) or both national classification and IPC H04R25/00		
Applicant MICROSOUND A/S et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.


2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 23.06.2004	Date of completion of this report 25.08.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Baumann, M Telephone No. +49 89 2399-2447



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International application No. PCT/DK 03/00833

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-25 as originally filed

Claims, Numbers

1-63 as originally filed

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-63
	No: Claims	
Inventive step (IS)	Yes: Claims	1-63
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-63
	No: Claims	

2. Citations and explanations

see separate sheet

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Prior Art

Reference is made to the following documents (D1 is introduced by the authorised examining officer and D2-D5 are cited in the international search report) :

D1: US-A-3 408 460 (VICTOREEN JOHN) 29 October 1968 (1968-10-29).

D2: US-A-5 434 924.

D3: US-B-6 480 8201.

D4: US-A-4 820 059.

D5: WO 02/096154 A.

Re Item V (novelty, inventive step, industrial applicability)

1. Technical field: Tuning of portable communication device to hearing impaired users.
2. Claim 1 is unclear (Article 6 PCT) because the definition of an essential step is missing, namely the step of adapting the signal processing characteristics of the portable communication device to the hearing impaired user after the steps of determining the perceptual reference level of the first and second stimuli signals at the reference and further frequency bands, and after the user has compared a loudness of the two stimuli signal. For the purpose of substantive examination, claim 1 has been interpreted as comprising the missing essential step as cited above.
3. The closest prior art document, D1, describes a method and an apparatus for testing the hearing of an impaired user in order to objectively determine the optimum pressure required at each frequency for most comfortable and intelligible listening and to properly prescribe hearing instruments, thus to improve user's compensation of hearing loss by exploiting the user's residual hearing range. The testing method includes the step of providing the user with short intervals of particular frequency, ie. series of pulses. The pressure of each series of pulses is varied until a sensation of equal loudness is obtained and until the audible sensations corresponds to the user's most comfortable level. The method eliminates the subjective determination of loudness and results in an objective determination of the user's residual hearing range.
 - 3.1. The subject-matter of **claims 1** differs from D1 in that:
 - the perceptual reference level (PRL) of a first stimuli signal (FSS) in a reference frequency band and a second stimuli signal (SSS) in a further frequency band is determined by presenting the FSS and the SSS to a hearing impaired user who compares the loudness of the two signals, and
 - the signal processing characteristics of a portable communication device is adapted to the results of the comparison.

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3.2. The subject-matter of **claim 41** differs from D1 in that:

- the hearing impairment of a user is determined on the basis of his perceptual judgement of a predetermined attribute of at least two stimulation signals he is presented with,
- the signal processing parameters of a portable communication device is adjusted according to the user's perceptual judgments, whereby the at least one stimulation signal comprises a set of test words with an effective spectral energy content lying within a restricted frequency band.

The methods of **claims 1 and 41** rely upon the perceptual level judgements of the communication device user for tuning the device rather than base the adaptation of the device processing characteristics on predicted hearing levels. With these methods, the communication devices can be tuned *in-situ* to the user's needs, and the methods take into account the user's individual psycho-acoustic preferences.

These features are neither known nor suggested by the documents D1 (see above) or D2-D5 cited in the international search report. Indeed, D2-D5 relate to hearing aids and methods of signal processing in hearing aids and not the adaptation of the processing characteristics the devices on the basis of the user's perceptual judgements.

- 3.3. **Claims 1 and 41** are therefore novel and involve an inventive step in the sense of Article 33(2) and (3) PCT.
4. **Claims 2-40 and 42-63** dependent on claims 1 and 41, respectively, and as such also meet the requirements of the PCT with respect to novelty and inventive step (Article 33(2) and (3) PCT).
5. The application as defined in claims 1-63 is doubtless industrially applicable (Article 33(4) PCT).